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IMAGES IN INTERVENTION

# Spontaneous Coronary Artery Dissection in a Patient With COVID-19



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Severe acute respiratory syndrome-coronavirus-2, which causes coronavirus-2019 (COVID-19), has reached a pandemic level. Cardiac injury, defined as an elevated high-sensitivity cardiac troponin I (hs-TnI), has been reported during COVID-19; it is associated with an increased risk of mortality (1). Several underlying mechanisms are possible: COV-2 myocarditis, acute coronary syndrome type 1 associated with plaque rupture (systemic proinflammatory stimulation and hypercoagulability), or type 2 (mainly related to oxygen mismatch) (2). All these etiologies require a specific diagnosis and appropriate management.

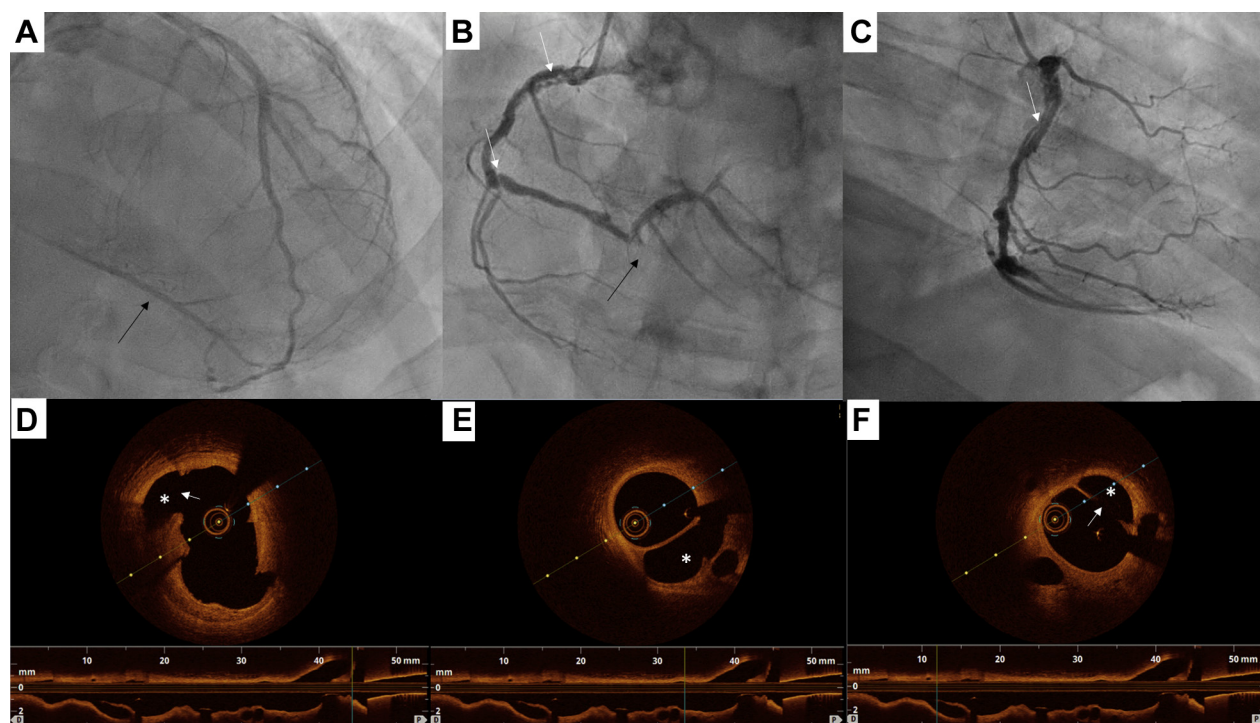
A 55-year-old man with a medical history of peripheral artery disease was admitted to our hospital for cough and febrile dyspnea with suspected COVID-19. The polymerase chain reaction was positive, and the computed tomography scan demonstrated bilateral crazy paving. Forty-eight h after admission, he complained of chest pain. His 12-lead electrocardiogram demonstrated inverted T waves in the inferior leads. Hs-TnI was at 355 ng/l, then 570 ng/l 3 h later (normal values <7 ng/l). Transthoracic echocardiography showed a left ventricular ejection fraction at 60% without wall motion abnormalities, no diastolic dysfunction, and a mild mitral regurgitation. Coronary angiogram performed via radial approach demonstrated a chronic total occlusion of the posterior

descending artery with epicardial collateral from the left anterior descending artery (Rentrop 3) (Figure 1A). In the mid-right coronary artery, a spontaneous dissecting coronary hematoma was observed with an intimal tear (Figures 1B and 1C). Flow grade was Thrombolysis In Myocardial Infarction (TIMI) 3 in the posterolateral artery. Optical coherence tomography (OCT) was performed in the right coronary artery and confirmed the spontaneous dissecting coronary hematoma with an intimal rupture (Figures 1D to 1F). A conservative management was decided. Patient was transferred to the medical department with treatment with aspirin, statins, and beta-blockers. A subsequent control coronary angiogram is planned.

Coronary artery dissection may be related to intraplaque hemorrhage resulting in an intradiverticular hematoma, spreading longitudinally along the coronary artery, dissecting the tunicae (3). Lessons from the previous coronavirus and influenza epidemics suggest that viral infections can trigger acute coronary syndrome primarily owing to a combination of a significant systemic inflammatory response plus localized vascular inflammation at the arterial plaque level (4). Herein, we report the first case of spontaneous coronary artery dissection in a patient with COVID-19 infection. In this pandemic period, almost all the physicians' attention is

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**FIGURE 1** Coronary Angiography and OCT of the Dissection

(A) Coronary angiogram of the left anterior descending artery with epicardial collateral to the posterior descending artery (black arrow). (B and C) Total chronic occlusion of the posterior descending artery (black arrow), and suspected intimal tear in the mid right coronary artery (white arrows). (D, E, and F) Optical coherence tomography (OCT) on the proximal (D), middle (E), and distal (F) part of the dissection (asterisks indicate the false lumen, white arrows show intimal rupture).

captured by the symptoms of COVID-19. This report shows that true acute coronary syndrome can occur in this setting and should be appropriately characterized. Whether specific mechanisms are triggered by this virus requires further scrutiny.

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